

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF NEW YORK

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REV. STEVEN SOOS, REV. NICHOLAS STAMOS,
JEANETT LIGRESTI, as parent and guardian of infant
plaintiffs, P.L. and G.L., DANIEL SCHONBURN,
ELCHANAN PERR, MAYER MAYERFELD, MORTON
AVIGDOR,

**DECLARATION OF DR. JAY
VARMA**

Plaintiffs, 20-CV-00651

-against-

ANDREW M. CUOMO, Governor of the State of New
York, in his official capacity, LETITIA JAMES, Attorney
General of the State of New York in her official capacity,
KEITH M. CORLETT, Superintendent of the New York
State Police, in his official capacity, HOWARD A.
ZUCKER, M.D., New York State Commissioner of Health,
in his official capacity, BETTY A. ROSA, Interim
Commissioner of the New York State Education
Department, in her official capacity, EMPIRE STATE
DEVELOPMENT CORPORATION (“ESD”), a New York
State Public Benefit Corporation, BILL DE BLASIO,
Mayor of the City of New York, in his official capacity,
DR. DAVE A. CHOKSHI, New York City Commissioner
of Health, in his official capacity, TERENCE A.
MONAHAN, Chief of the New York City Police
Department, in his official capacity, RICHARD
CARRANZA, Chancellor of the New York City
Department of Education in his official capacity,

Defendants.

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DR. JAY VARMA, declares pursuant to 28 U.S.C. § 1746, under penalty of
perjury, that the following is true and correct:

1. I am presently employed as Mayor Bill de Blasio’s Senior Advisor for
Public Health.

2. After graduating magna cum laude with highest honors from Harvard, I completed medical school, internal medicine residency, and chief residency at the University of California, San Diego School of Medicine. In 2001, I joined the Center for Disease Control and Prevention (“CDC”) Epidemic Intelligence Service, working on foodborne diseases. From 2003 to 2008, I served in Bangkok, Thailand, directing CDC’s TB programs and research in Southeast Asia. From 2008 to 2011, I served in Beijing, China, directing CDC’s International Emerging Infections Program which assisted the Chinese government on infectious diseases. From 2011 to 2017, I served as the Deputy Commissioner for Disease Control at the New York City Department of Health and Mental Hygiene. From 2017 to April 2020, I served as the Senior Advisor to Africa Centres for Disease Control and Prevention at the African Union in Addis Ababa, Ethiopia. I guided the creation of Africa CDC, developing its strategy and supporting implementation of its public health programs, and authored the Africa CDC’s continent-wide strategy for COVID-19 in Africa and critical policy documents on COVID-19 control measures. I have authored 138 scientific manuscripts, six essays, and one book. A Captain in the United States Public Health Service, I have been recognized as the U.S. Public Health Service Physician Researcher of the Year (2010) and Physician Leader of the Year (2017), and have received the two highest awards in the US Public Health Service (Distinguished Service Medal, 2011; Meritorious Service Medal, 2018).

3. I submit this declaration in support of defendant Bill de Blasio’s, Dr. Dave A. Chokshi’s, Terence A. Monahan’s and Richard Carranza’s (City Defendants) opposition to the motion for a temporary restraining order (“TRO”) enjoining enforcement of Governor Cuomo’s Executive Order 202.68 (the “subject Order”) issued on October 6, 2020.

4. The subject Order directed that the State Department of Health determine areas in the State that require enhanced public health restrictions due to severe increases in the number of COVID-19 infections in specific geographic areas of New York State and impose mitigating measures in those areas.

Zones

5. The virus that causes COVID-19 infection has not been eliminated from the United States or anywhere in the world, because there is no medication that can cure infection, and no vaccine that can prevent infection. Many people remain infected in the United States and the rest of the world, creating a large pool of infected people that can infect others.

6. COVID-19 is most commonly transmitted by small viral particles exhaled by an infected person that are deposited into the nose, mouth, and/or eyes of an uninfected person. These viral particles travel through the air.¹ The consensus by CDC, World Health Organization (“WHO”), and other infectious disease experts is that the only way to limit illness and death from this infection is through a combination of measures, including: individual behaviors such as wearing masks, maintaining physical distance from others, washing hands, and completely avoiding contact with others when ill; widespread testing with isolation of cases and quarantine of contacts; and community social distancing measures.^{2,3}

7. Community social distancing measures need to be adaptive to the state of the epidemic: when incidence rises in a specific area, such measures need to be imposed; when

¹ Infected people that are asymptomatic can spread the virus and, if unaware they have the virus, pose a significant risk to the spread of the virus, as they will not be taking the necessary precautions to prevent further spread. However, if people are wearing face coverings, maintaining physical distance, and not gathering in large groups, that risk is significantly reduced.

² https://www.cdc.gov/mmwr/volumes/69/wr/mm6915e2.htm?s_cid=mm6915e2_w

³ <https://www.who.int/publications/i/item/overview-of-public-health-and-social-measures-in-the-context-of-covid-19>

incidence declines, such measures can be progressively removed. It has been well demonstrated from many places throughout the United States and globally that imposition of community social distancing measures early during an increase in incidence effectively reduces transmission and allows more rapid removal of those restrictions.^{4,5}

8. In geographic areas in which there is widespread transmission, efforts to minimize the frequency, duration, and intensity of contact within the community through community social distancing can substantially reduce infections, illnesses, and deaths. In the words of the CDC, “[c]ommunity mitigation efforts aim to reduce the rate at which someone infected comes in contact with someone not infected, or reduce the probability of infection if there is contact. The more a person interacts with different people, and the longer and closer the interaction, the higher the risk of COVID-19 spread.”⁶

9. The subject Order’s zoned approach reflects the “community social distancing” approach by imposing mitigation steps in geographic areas with high positivity rates. The subject Order establishes three zones and sets forth different restrictions for each zone. The red zone has the highest positivity rate.⁷ In these areas of New York City (“City”), the orange zone, or the “moderate severity” or “warning” zone, surrounds the red zone. The yellow zone, or the “precautionary zone,” surrounds the orange zone.⁸

⁴ <https://www.nature.com/articles/s41586-020-2405-7>

⁵ <https://www.cdc.gov/mmwr/volumes/69/wr/mm6940e3.htm>

⁶ See <https://www.cdc.gov/coronavirus/2019-ncov/community/community-mitigation.html>

⁷ It is my understanding that Plaintiffs allege that the sample size is too small to be statistically significant, thereby purportedly making the positivity rates unreliable. In New York City, the percentage of the population receiving tests in these areas is comparable to other areas in the City. Thus, comparing the positivity rates of the areas provides accurate insight into which areas have higher positivity rates.

⁸ See the following link for access to the current maps:
<https://nycgov.maps.arcgis.com/apps/instant/lookup/index.html?appid=021940a41da04314827e2782d3d1986f>

10. The greatest restrictions are in the red zones. Non-essential gatherings of any size are not permitted. Houses of worship are permitted to be open at up to 25% capacity or a maximum of 10 people, whichever is fewer. Restaurants may be open for take-out and delivery only. By contrast, all other non-essential businesses in the red zone must be closed.

11. In the Orange Zones (moderate severity or warning), the subject Order prohibits non-essential gatherings greater than 10 people and allows up to 33% capacity in houses of worship or 25 people, whichever is fewer.⁹ Restaurants may allow outdoor dining with a limit of four people per table. While certain other non-essential businesses (for which there is a high risk for virus transmission such as gyms and salons) must be closed, other non-essential businesses may operate at the same 50% capacity those businesses are operating at in the non-red zone areas of the City.

12. In the Yellow Zones (precautionary), non-essential gatherings greater than 25 people are prohibited, and up to 50% of capacity is allowed in houses of worship. That is, houses of worship in the yellow zone are under the same restriction as houses of worship in areas of the City not in a designated zone. Restaurants may be open for indoor dining (at 25% capacity in New York City) with each table seating no more than 4 people.

13. The multi-zone approach is necessary to prevent the spread of the virus beyond the high incidence areas. When a geographic area is identified as needing community social distancing measures, public health officials need to ensure that the restrictions take into account the fact that people on the outer edges of a zone border are likely to conduct activities on the other side of that border. Creating a “buffer” zone around the geographic area of widespread

⁹ Although from a public health perspective I would recommend enforcing if a house of worship is occupied above 33% of its capacity as set forth in the subject Order, it is my understanding that due to the Preliminary Injunction entered in this case, the City will only be enforcing if a house of worship in the orange zone is occupied above 50% capacity.

transmission is likely to help decrease the frequency, intensity, and duration of contact between people at highest risk of infection (those within the “red” zone) and those outside, but in close proximity to, the red zone.

Houses of Worship

14. It is my understanding that the plaintiffs in this case are arguing that the occupancy of houses of worship should not be restricted and should be treated like essential services or other non-essential services that may be open at a greater capacity. However, in red and orange zones, occupancy restrictions need to be stricter in houses of worship than other indoor settings that may remain open (which, as noted above are very limited in red zones and somewhat limited in orange zones) because (a) houses of worship have an increased risk of large COVID-19 outbreaks compared to other indoor settings, (b) outbreaks in houses of worship have an increased risk of causing community transmission.

15. Scientists have determined that a disproportionate number of COVID-19 cases can be linked back to events in which a single person with COVID-19 infection infects many other people, also known as “super-spreading events.”¹⁰ Gatherings of people from different households present a particularly high risk, because a single person with COVID-19 infection infects many more people than they would otherwise have the opportunity to interact with and those newly infected people now return to different households and, sometimes, communities, further spreading the virus. Consequently, limiting the size of gatherings, as well as requiring physical distancing and the use of face coverings, is particularly essential to stop the spread of COVID-19,¹¹ as is advised by the WHO and CDC.

¹⁰ See <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7258476/pdf/20-0495.pdf>
<https://www.nature.com/articles/s41591-020-1092-0>

16. Substantial scientific evidence indicates that transmission to multiple people, also known as “clusters” or “outbreaks,” is more likely to occur in settings that are indoors, have insufficient ventilation, and involve large numbers of people, in close proximity, using their voices for speaking, chanting, and/or singing.¹²

17. Houses of worship are particularly high risk, because they involve large numbers of people from many different households, arriving and departing at a similar time, spending substantial time indoors, in close proximity, while using their voices for speaking, chanting, and singing.¹³ Large outbreaks have been documented in many parts of the US and around the world attributable to services in houses of worship.¹⁴ Outbreaks in Maine and in South Korea document how an outbreak in a house of worship can cause a substantial number of infections, illnesses, and deaths in a larger community, not simply among the attendees.¹⁵

18. Because COVID-19 is transmitted person-to-person, it spreads through social networks. Outbreaks are particularly problematic when they bridge social networks, i.e.,

¹¹Although outdoor gatherings are a safer option than indoor gatherings, COVID-19 can still be contracted while outdoors, especially if people are not physically separated and wearing masks. Moreover, as with indoor gatherings, the high rate of infection in the community makes the likelihood transmitting infection at a gathering greater by virtue of simply being exposed to more people with COVID-19 infection. Thus, it is necessary to limit outdoor gatherings, especially in high and moderate risk areas.

¹² See **Leclerc QJ, Fuller NM, Knight LE, et al; CMMID COVID-19 Working Group.** What settings have been linked to SARS-CoV-2 transmission clusters? *Wellcome Open Res.* 2020;5:83. [PMID: 32656368] doi:10.12688/wellcomeopenres.15889.2 and **Furuse Y, Sando E, Tsuchiya N, et al.** Clusters of coronavirus disease in communities, Japan, January-April 2020. *Emerg Infect Dis.* 2020;26. [PMID: 32521222] doi:10.3201/eid2609.202272

¹³ See **James A, Eagle L, Phillips C, et al.** High COVID-19 attack rate among attendees at events at a church — Arkansas, March 2020. *MMWR Morb Mortal Wkly Rep.* 2020;69:632-635. [PMID: 32437338] doi:10.15585/mmwr.mm6920e2

¹⁴ See <https://www.nytimes.com/2020/07/08/us/coronavirus-churches-outbreaks.html>

¹⁵ See for example, <https://www.bostonglobe.com/2020/09/17/metro/officials-believe-outbreak-linked-aug-7-wedding-maine-tied-smaller-cluster-church/>; <https://graphics.reuters.com/CHINA-HEALTH-SOUTHKOREA-CLUSTERS/0100B5G33SB/index.html>.

individuals from one household or social network infect people from a different social network, as they can become “super-spreader” events.

19. Houses of worship pose a higher risk in the spread of the virus than retail and many the other non-essential activities that are subject to less restrictive mitigation strategies in the orange zone pursuant to the subject Order.¹⁶ For instance, when shopping in a store, patrons generally do not stand in one place for a period of time, and typically have limited contact with others. It is possible that a patron’s only contact with another person will be when the patron interacts with the cashier for a few minutes before leaving the store. In contrast, when in a house of worship, there are typically multiple people sitting or standing in a single room, often singing, chanting or speaking for extended periods, and often in unison.

20. Houses of worship are akin to movie theaters and concert venues, where large numbers of people gather in a single space for a long period, often speaking or singing, arriving and departing at a similar time, and coming from many different households. It should be noted that at this time movie theaters and concert venues are not permitted to be open in any part of New York City.¹⁷ Under the subject Order, houses of worship in restricted zones are treated no worse than other activities that pose a comparable risk to the public. Indeed, even in red zones, houses of worship are permitted to remain open in a limited manner.

Schools

¹⁶ It is my understanding that Plaintiffs argue that it has been mathematically calculated that the risk of contracting COVID-19 in manufacturing environment, which is likely an essential business, is greater than the risk of contracting COVID-19 in houses of worship. The risk of contracting COVID-19 in various indoor environments depends on many factors including the prevalence of infection in the community, the number of people at the event, adherence to the wearing of masks and maintaining physical distance, the adequacy of ventilation, and the use of voices for speaking, chanting, and/or singing. Because of the number of variables involved, it is not scientifically valid to calculate a mathematical risk for all types of factories, warehouses or congregate settings and for all services held within houses of worship and compare the two. Policy needs to be made based on scientific consensus of different levels of risk using both qualitative and quantitative measures and reasonable restrictions on the number of people and types of activity permitted in different indoor settings.

¹⁷ It also worth noting that indoor dining, which was only authorized on September 30, 2020 in New York City, is limited to 25% capacity.

21. I understand that the plaintiffs in this case are also asserting that there is no basis to close schools in the red or orange zones. Schools, however, typically draw students and teachers from a variety of neighborhoods throughout the City. As discussed above, the “community social distancing” approach depends not only on mitigating factors within the high-risk community, but also requires a zoned approach to create a buffer to help contain the outbreak. Closing of businesses and limitation on gatherings in the red and orange zones are intended to help reduce the infection rate in those communities, while deterring people from other communities from entering those communities. Allowing schools to be open would result in people from all over the City entering high and moderate risk communities, which is counterproductive to the zoned mitigation approach. In other words, the buffer zone would be filled with holes. Thus, in order to reduce the exposure of people from low-risk communities to people in the high and moderate risk communities, schools must be closed in those communities.¹⁸

Enforcement

22. Enforcement of the subject Order is necessary and urgent. On August 10th, New York City had its lowest daily average of new cases (233) since the epidemic's peak. In early September, the number of cases started rising. On September 24th, the daily average for new cases was 352, a 50% increase in cases over 45 days. It then took only 12 days to increase another 50% to 567 cases on October 6th. Since the date of the October 6, 2020 subject Order, the daily average of new cases has begun to decline, and is currently 461 as of October 12, 2020.

¹⁸ Although it is possible that people in the red and orange zones go to school (or work) in a non-designated area of the City, and thus could potentially carry the virus with them, that is significantly different than bringing people from elsewhere into a red or orange zone. There is a higher density of positive cases in the red and orange zones than elsewhere in the City, meaning that a person that travels into those zones is likely to encounter a greater number of infected people than if they remained outside those zones. Thus, the risk of people from outside the designated zones contracting the virus by going to school or work in those zones is much greater than the risk of a person from the red or orange zone transmitting virus while they are working or attending school outside these zones.

This slight reduction in the number of positive cases, along with positivity rates in the red zones that have more or less flattened or begun to reverse over the last two weeks, as explained in paragraph 23, indicates that the combination of measures that have been taken (Phase 4 restrictions with the additional restrictions imposed by the subject Order) are having some positive effect.

23. For the week ending October 15, 2020, the red zone in Brooklyn had a positivity rate of 7.83%, down from 8.07% the week prior. The positivity rate in the red zone in the Flushing, Queens area was 3.36%, down from 3.99%. The positivity rate in the red zone in the Rockaways, Queens area was 7.93%, up from 7.70%.¹⁹ New York City's overall citywide rate is 1%. A positivity rate greater than or equal to 3% is used by New York City officials as an indicator that there are high levels of transmission in a community.²⁰ In addition to being over 3%, the magnitude of disparity between the citywide rate and a particular area is a warning sign that transmission in these communities is widespread and requires strong control measures to prevent spread beyond that community. The reproduction rate (or rate in which someone positive for COVID 19 spreads it to others) in New York City is estimated to be 1.12 (meaning a person positive for COVID 19 will typically infect just over one other person). Any reproduction rate above 1.0 is considered problematic for the control of the virus. While it is not possible to determine the reproduction rate for the zones (due to their small size), I believe that

¹⁹ The State's positivity rates for these areas differ to some degree due to administrative differences in how they group cases by the date (e.g., report date vs. specimen collection date). Regardless of which approach is used, the State's numbers demonstrate the same trend of increased positivity rates in these particular areas.

²⁰ Increases above 3% are much more significant than increases below 3%. For instance, a change from 1% to 2%, while a 100% increase, is not as concerning from an epidemiological perspective as an increase from 3% to 4%. The reason is that percentage positivity is a proxy for the number of infections in a community. Statistics from jurisdictions throughout the United States and the world demonstrate that once infections cross a critical threshold, the increase in cases goes from being linear (a steady upward slope) to being exponential (a rapid upward slope that becomes steeper each day). See https://covid.cdc.gov/covid-data-tracker/#testing_testsperformed; <https://www.who.int/docs/default-source/coronavirus/situation-reports/20201012-weekly-epi-update-9.pdf>

the reproduction rate is much higher in the red zones than citywide, and is likely driving the City's overall reproduction rate above 1.0. This means that the number of infected people in the City will progressively increase as each positive person infects multiple others.

24. New York City cannot risk a widespread resurgence of the virus. At least 19,237 people in the City have lost their lives to COVID-19. At least 243,975 New Yorkers have been infected in the City, of which 57,694 have been hospitalized.²¹ Every New Yorker (and every American), has been socially, emotionally and economically impacted by the virus and the necessary restrictions imposed to mitigate it. New York City has carefully reopened, balancing the desire and need to return to pre-COVID-19 life, with the reality that the virus is still active, and under the threat of a resurgence.

25. In order to maintain that progress and continue to avoid the loss of life, the City must be able to take proactive, swift and strong action to mitigate the spread of the virus in the designated zones pursuant to the subject Order. An order enjoining the enforcement of the subject Order places the City in a precarious situation, potentially undermining the months of careful reopening and progress.

Dated: New York, New York
October 20, 2020



Jay Varma, M.D.

²¹ See <https://www1.nyc.gov/site/doh/covid/covid-19-data.page>